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TIME TO CONSOLIDATE: 22 AIR CONTROL WING

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TIME TO CONSOLIDATE: 22 AIR CONTROL WING

AIM

1. This paper will convince Commander 1 Canadian Air Division (Comd 1 CAD) that command of 12 and 42 Radar Squadrons (RS) should shift to 22 Wing North Bay while remaining in-place at 3 Wing Bagotville and 4 Wing Cold Lake as lodger units.

INTRODUCTION

2. Envision a Royal Canadian Air Force (RCAF) Squadron centered on a deployable Air Defense Control Facility (ADCF)¹ which is seamlessly interoperable with and under the command of the Canadian Air Defense Sector (CADS). The ADCF is able to conduct aerospace control and warning of a region by using internet protocol to access the radars and radios in its area of operations; augmenting, supplementing or replacing CADS as needed. It possesses a tactical radar, remote communications and remote data link systems which it can tactically deploy as needed. For force protection, the ADCF and emitters are dispersed from one-another, rendering the ADCF nearly emissions silent and extremely challenging to target. The Squadron is expeditionary, high readiness, has integral mobility, and is self-sufficient for up to 30 days, less fuel.

3. The RS are close to realizing the technical aspects of this vision. They however lack the functionally aligned command structure to fully resource and employ their robust capabilities. This paper will demonstrate that grouping of the RS under a single Wing Commander (WComd) will increase effectiveness, through functional alignment and centralized management of AD resources, with no adverse effects on Fighter Force generation. First, the present status of the RS will be situated. Next, the equities of the Fighter Wings and 22 Wing will be explored in two consecutive sections. Finally, a concise comparison to select allies will evidence the logic of this functional re-organization. Notably, integration under 2 Wing will not be discussed as they lack a standing North American Aerospace Defence Command (NORAD) mandate rendering them incompatible.

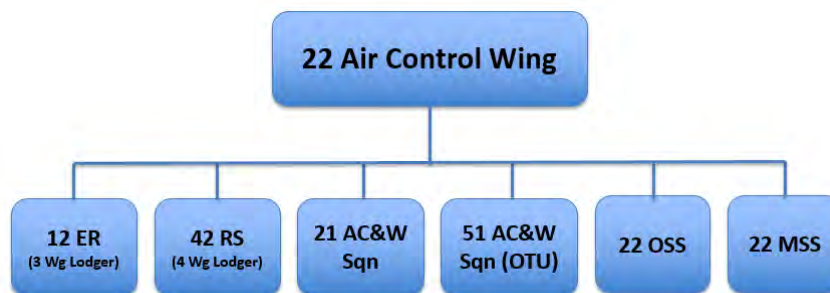


Figure 1 -- proposed hierarchy for 22 ACW

¹ 1 Canadian Air Division Orders, Volume 3, 3-702: *Certification of facilities*. (Winnipeg: December 2000), annex A.

DISCUSSION

Radar Squadrons: Transformation through optimization.

4. During the 1990s, the RS were established in their present locations under 3 Wing and 4 Wing to provide direct support to the Fighter Squadrons (FS) as their primary control agencies. During this time, the units' AN/TPS-70 mobile radars (TPS-70) were the only sensors which the Wings had to illuminate their training areas. Incremental increases in networking capability and a 2017 operations room modernization project changed this situation by giving the RS the ability to fuse civilian radar systems surrounding the training areas into a single picture. This reduced the need for the RS' tactical radars to conduct local training, from required to desired. Today, if either RS' TPS-70 is absent, Air Battle Managers (ABM) use the peripheral civilian radars to support local training.²

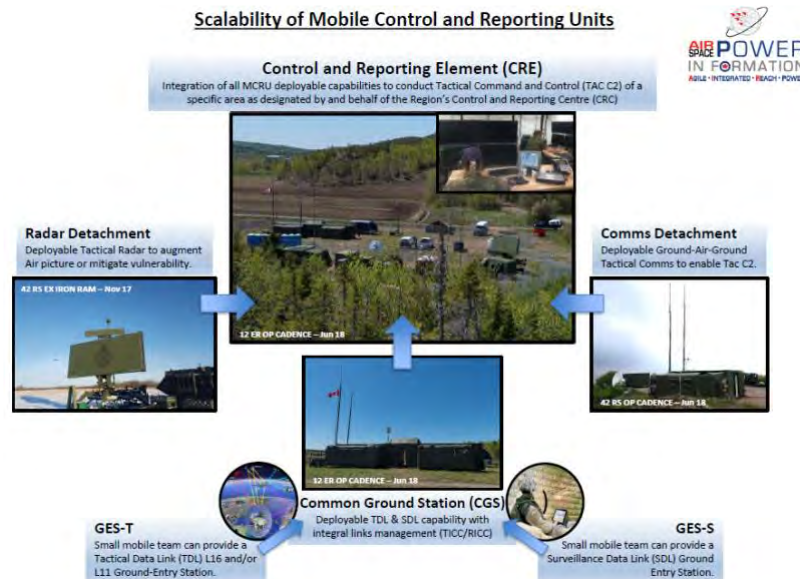


Figure 2 -- MCRU Scalability

Source: 22 Wing Sharepoint, *CRC Placemat*, 2.

5. The mitigated impact of an absent TPS-70 on Fighter Force generation permitted the RS to start realizing internal transformations into scalable Mobile Control and Reporting Units (MCRU) (figure 2). By optimizing their current equipment, each RS is capable of providing up to a Control and Reporting Element (CRE)³ centered on a deployable ADCF. Their role as a CRE is to augment a superior Control and Reporting

² CADS gained access to and fused the additional radar feeds shortly after the terrorist attacks of September 11th, 2001 when it absorbed most internal Canadian radar feeds in support of OP NOBLE EAGLE. It has therefore had the ability to conduct Fighter Force generation without the TPS-70 for significantly longer than the resident RS.

³ RCAF *Command and Control* doctrine defines a Control and reporting element (CRE) is a radar sqn/unit subordinate to a CRC that contributes to the RAP through augmented surveillance, identification and data-link management. A CRE may assume any of the duties normally assigned to a CRC.

Centre (CRC)⁴ by helping mitigate regional capability gaps, enhancing their span of control, and providing limited continuity of operations (COOP) for a range of situations.

6. 12 RS validated the CRE concept in June 2018 when they deployed for Operation (OP) CADENCE⁵ (Air Security for the 44th G7 Summit); and the capability to disperse in May-June 2019 when they deployed to Goose Bay for OP OXYGEN RIPOSTE. The re-envisioned ADCF, no longer a slave to only the TPS-70's feed, assumes sensor fusion and was therefore internally developed to be capable of regional air control.



Op CADENCE ADCF; Op OXYGEN RIPOSTE dispersed ADCF and Radar sites
Source: 12 RS unit photography.

7. The RS are ready to do more for Canadian NORAD Region (CANR) and without impacting Fighter Force generation. More than just a mobile, tactical radar for supporting aerospace warning in CANR (e.g. radar gap fill); their scalable, expeditionary capabilities include a credible ADCF for air control (e.g. CADS COOP for OP CADENCE). Comd 1 CAD should shift command of the RS to 22 Wing so the CRE capability may be collated and formalized vis-a-vis the change to the 1 CAD/CANR command structures.

The Fighter Wings: Ownership versus proximity.

8. Accepting that advancements in networking and sensor fusion do allow for local FS training to be supported with or without the TPS-70, the Fighter Wings no longer have a need to control the RS assets through command. Assuming a transfer of command, they would have two primary concerns:

- a. Ensuring continued ownership over local infrastructure to ensure care of local systems supporting Wing force generation; and
- b. Maintaining the face-to-face relations between fighter pilots and ABMs.

⁴ RCAF *Command and Control* doctrine defines a Control and reporting centre (CRC) is a ground-based, integrated C2 sqn/unit that may be static, mobile or deployable. Subordinate to the CAOC, the CRC is responsible for the decentralized execution of all defensive-air, offensive-air, and airspace-management activities within an assigned area . . . Canadian Air Defence Sector (CADS) is the primary RCAF CRC. Limited, mobile CRC capability is provided by the RCAF's mobile RS.

⁵ Capt Gabriel Lafrance-Robineau. "Military aerospace control community shines at G7 Summit in Charlevoix," *The Maple Leaf*, (last modified: 12 September 2018). <https://ml-fd.caf-fac.ca/en/2018/09/19037>.

9. There would be no change to infrastructure. As lodger units of the Fighter Wings, CFB Bagotville and CFB Cold Lake would retain ownership over the garrison and radar sites infrastructure. This includes the fixed garrison control centres, radomes and radios all of which support local operations. The RS would also remain in their current facilities.

10. There would be a requirement to transfer the vehicles, mobile radar system, deployable equipment and field stock with the Squadrons. Considering the maintenance of the RS' vehicle fleets can only be done locally, this will require inter-wing agreements and accounting by 22 Wing. This is actually advantageous for the Fighter Wings as it permits increased focus on airfield operations and not distracted by having to manage equipment required to deploy an expeditionary RS.

11. The co-location of the RS and the FS remains ideal as the co-location of ABMs and fighter pilots is the most significant enabler of effective force generation. Remaining neighbours to the FS allows for daily face-to-face interactions through mission briefs and debriefs, tactics discussions, collaborative planning, countless informal interactions, and attendance of social events. Over time this builds trust, cohesion and elevates competency - via shared understanding and empathy - beyond what would be possible without the proximity. This relationship exists not because of the command ownership, but because of the bond and warrior spirit that the two communities' share.

22 Air Control Wing: Resourcing and authority.

12. The 22 WComd position is unique in that they not only support and generate but also employ forces daily as Comd CADS⁶. Further, the 22 WComd position is the chair of the Aerospace Capability Advisory Group (ACAG)⁷ which is responsible for fleet management and identifying force development needs, including those of the data links and space communities⁸. With this in mind, two basic ingredients are required from the institution to setup a Commanding Officer (CO) for success: resources (personnel, fiscal & material); and authority over them. Through these lenses, many of the institutional advantages of shifting the RS under 22 Wing are evident.

Resources

13. *Human resources.* Institutionally, the WComd is the first level of review and authority within the "Air Command establishment change prioritization process".⁹ WComds are authorized to make decisions on "cosmetic changes"¹⁰ and are goal keepers

⁶ Royal Canadian Air Force. "22 Wing North Bay," last accessed 27 October 2019, <http://www.rcfaf-arc.forces.gc.ca/en/22-wing/index.page>.

⁷ 1 Canadian Air Division Orders, Volume 1, 1-624: *Capability Advisory Groups - Terms of Reference*. (Winnipeg: 21 December 2010), 5.

⁸ *Ibid.*, 2.

⁹ 1 Canadian Air Division Orders, Volume 1, 1-019: *Establishment Control and Change – Regular Forces*. (Winnipeg: 21 December 2005), 1.

¹⁰ BGen Sean T. Boyle, *1 Canadian Air Division Annual Establishment Change Call Letter for FY 2020/2021*. 1 Canadian Air Division: file 1901-1 (A1 Force Mgt 2), 13 March 2019, 13.

for elevating requests to 1 CAD for furtherance in the process.¹¹ Their cosmetic authorities include inter-unit positional loans within their Wing. Consolidation of AD units empowers the 22 WComd to consider internal adjustments in staffing levels holistically across the four operational squadrons. This would allow them to address select deficiencies and internally re-balance where needed to ensure both force generation and force employment.

14. *Fiscal resources.* The 22 Wing business plan maximizes its potential for strategic communications when the RS are included. Alignment of RS with the occupation’s vision, as detailed within the ACAG and approved by Comd 1 CAD, would be formalized through 22 Wing’s business planning process. The budgets would be equally informed and certain shared costs common to the AD Squadrons could reap an economy of scale.

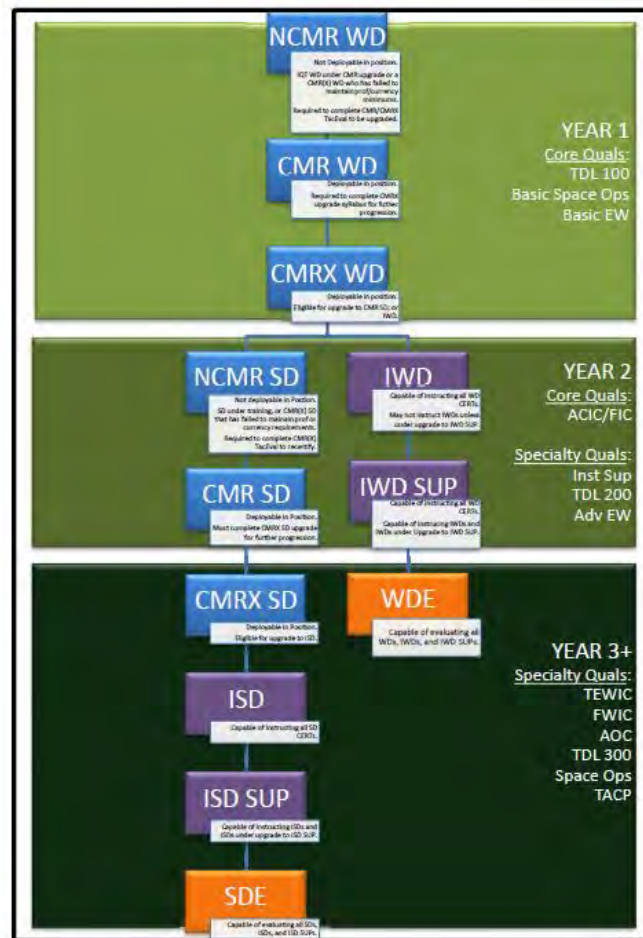


Figure 2: ABM CERT Progression Hierarchy

Figure 3 -- ABM Certification Progression Hierarchy
Source: B-GA-163, *Air Battle Management Training Directive*, 1-2.

¹¹ 1 CAD O 1-019, *Establishment Control* . . . , 2-3.

15. Notably, consolidation permits a Wing-level budget for advanced training to fund the progression of ABM certifications (figure 3) per the ABM Training Directive. Analysis of FS flying statistics from 2017 and 2018 demonstrated that the Fighter Force is not able to fly enough volume nor sufficient complexity to meet ABM proficiency requirements. Amongst other solution, this data drives a requirement for ABMs to conduct advanced training outside of Canada to meet the fleet's proficiency requirements associated to “combat mission ready – experienced” controllers and supervisors.¹² It is therefore in the RCAF’s interests to consolidate the RS under 22 Wing as it allows the Wing to budget for, manage and fund ABM advanced training. The AD needs would be informed and synchronized by 22 Wing representation at 1 CAD’s annual training and exercise conference.

16. *Material resources.* Currently, 22 Wing’s material resources are limited to what they own in North Bay and influence through Raytheon with no ability to project any ground-based C2 effects within CANR. The RS’ deployable equipment will empower 22 WComd, in their role as Comd CADS, with an array of data links, communications and sensors needed to effect CANR’s vast battlespace. Comd CADS will no longer need to consult a peer WComd before offering Comd CANR tactical options saving time and reducing the complexity of the tasking process.

Authorities

17. *Force Generation.* Operational training can be better managed with both operational training units, 51 Squadron and 42 RS, under a single WComd. This is especially true now that 22 Wing’s Mission Training Centre (MTC), a scalable and networked synthetic training lab, is online. A scalable simulation capability, its significant potential as a full crew trainer was evidenced during Ex COALITION VIRTUAL FLAG 19-4. When linked to a WComd’s fiscal and travel authorities¹³, the potential of the MTC as the engine of ABM force generation cannot be overstated.

18. *Force Employment.* More direct control will simplify the RS’ tasking and reporting process¹⁴ allowing for increased delegations from Comd 1 CAD to Comd 22 Wing in their mirrored capacities as NORAD force employers. These delegations will flatten the CANR organization streamlining contingency tasks which will only increase in frequency as the North Warning System (NWS) ages. Equally, planning for deliberate CANR operations (e.g. Canadian Special Security Events) is simplified as the extant reporting relationships are maintained. RS gain more value as a NORAD asset under the 22 WComd as their ability to more efficiently employ the capability translates into being

¹² Department of National Defence. B-GA-163-000/AA-001, *Air Battle Manager Training Directive*. (Winnipeg: 1 September 2018), 1-2.

¹³ 1 Canadian Air Division Orders, Volume 1, 1-310: *International Temporary Duty*. (Winnipeg: 21 December 2005), 1.

¹⁴ 1 Canadian Air Division Orders, Volume 3, 3-708: *8 Air Communications and Control Squadron, 12 and 42 Tactical Control Radar Squadron – Tasking Procedures*. (Winnipeg: 21 March 2013), 3.

more heavily invested in ensuring that the capability is fully considered within CANR plans and operations.

19. *Force Sustainment.* 22 Wing's Maintenance Support Squadron (MSS) is specialized to support AD computer and communications systems, to include informing cyber defence. This differs from 3 and 4 Wing who are specialized to support airfield operations and the FS. The main service provided to the RS in location is management of cryptographic and other communications security material. Consolidation would deepen mutually beneficial relationships between the three Wings' support squadrons through the need to cross-coordinate for any local support requirements.

20. In addition to expertise, the consolidation will empower 22 MSS as the technical voice to Aerospace Readiness and A6, reducing pressure on staff and the Squadron COs. Many of the tracking mechanisms, to include the monthly Tactical Control Radar and Communications Maintenance Summary report, are already produced by 22 MSS.

21. *Force Development.* The reality that the RS have different battle control software than CADS emphasizes the importance of having all four operational Squadrons under the same WComd. Disconnected from 22 Wing and the NORAD mandate, the two RS have neither received the same amount of investment nor been similarly considered for updates that CADS has received since 9/11. In contrast, a consolidated and invested Air Control Wing will advocate more inclusively to ensure its fielded forces are seamlessly interoperable with NORAD; as well as being capable of integrating in a US-led coalition and the North Atlantic Treaty Organization (NATO).

22. *Force Management.* The absorption of the RS will give more direct control to the ACAG, as the capability's force manager, by placing the preponderance of AD resources under their command as 22 WComd. For the first time, the ACAG will be able to ensure alignment of all the Squadrons through the variety of mechanisms previously described; business planning and personnel management chief amongst them.

Allies: How we compare.

23. Functional alignment of AD capabilities under an Air Control Wing is consistent with our allies. To the South, the United States Air Force 552nd Air Control Wing is made-up of all their E-3 Airborne Early Warning (AEW) Squadrons as well as their two ground-based Air Control Squadrons (ACS).¹⁵ These two ACS' have been generating the forces required to staff *Kingpin*, the CRC responsible for the airspaces over Iraq, Syria and Afghanistan. The AD fleet contributes ABMs to *Kingpin* via OP FOUNDATION, coordinated through the ACAG.

24. Full consolidation of Aerospace control capabilities within the Royal Australian Air Force (RAAF) occurs at the Group level. The Surveillance and Response Group

¹⁵ United States Air Force. "552 Air Control Wing – Fact Sheet," last accessed 27 October 2019, <https://www.552acw.acc.af.mil/Library/Fact-Sheets/>.

blends aerospace and maritime domain awareness with its four Wings, one of which is actually long range maritime patrol: Air Defence (No.41), Airborne Early Warning and Control (No.42), Air Traffic Control (No.44), and Maritime Operations (No.92).¹⁶ A consolidated 22 Air Control Wing would closely resemble the RAAF's No.41 Wing.

25. The Royal Danish Air Force (RDAF) operates three radar Squadrons (two fixed and one mobile) under a single Air Control Wing all of whom report to NATO CRC Karup.¹⁷ Setting aside the NWS radar sites, this looks strikingly similar to the proposed Canadian model. Interestingly in 2015, the RDAF were able to temper the blow of having to withdraw Danish F-16 from theatre by sending their AN/TPS-77 transportable radar whose permanence effectively replaced multiple AEW aircraft.¹⁸ This highlights the strategic effects a relatively cheap and modest capability like the RS can have.

CONCLUSION

26. The RS continue to do a remarkable job at internally optimizing their resources to maximize their effectiveness and CRE interoperability with CADS as Canada's CRC. The transformations are supportive of Canada's Defence Policy which aims to "expand Canada's capacity to meet NORAD commitments by improving aerospace and maritime domain awareness" in order to remain "SECURE in North America".¹⁹ However, the current command structure is holding the RCAF back from realizing the full potential of the RS.

27. As the RCAF's only deployable long-range radar capability, shifting the RS under a single Air Control Wing will be a drastic improvement in the RCAF's ability to meet NORAD commitments. It will also help realize operational possibilities, similar to the RDAF example, if Comd 1 CAD desires. Effectiveness will only improve as the RS continue to modernize. The RS are poised for the change in command relationship and functional alignment of RS under 22 Wing has many synergies:

- a. Aligning ABMs with their primary force generator;
- b. Aligning CREs with the national CRC; and
- c. Arming CADS with scalable, expeditionary capabilities to more efficiently meet Canada's NORAD commitments.

¹⁶ Royal Australian Air Force. "Surveillance and Response Group," last accessed 27 October 2019, <https://www.airforce.gov.au/about-us/structure/air-command-headquarters/surveillance-and-response-group>.

¹⁷ Royal Danish Air Force. "Danish Defense: Organisation," last accessed 27 October 2019, <https://www2.forsvaret.dk/eng/Organisation/AirForce/Pages/RoyalDanishAirForce.aspx>

¹⁸ Airwars. "Denmark brings F-16s home on first anniversary of anti-Daesh mission," last accessed 27 October 2019, <https://airwars.org/news-and-investigations/denmark-brings-f16s-home-on-first-anniversary-of-anti-daesh-mission/>.

¹⁹ Department of National Defence, *Strong, Secure, Engaged: Canada's Defence Policy*. (Ottawa: DND Canada, 2017), 60-61.

RECOMMENDATION

28. This paper has the following three recommendations:
- a. Immediately start the process to transfer tactical command of 12 and 42 RS from 3 and 4 Wing to 22 Wing North Bay. The goal should be to synchronize the transfer with the business planning cycle to avoid any lapses in support or gaps in funding;
 - b. Revise 1 CAD O 3-708 to reflect the changes to the command structure. This should include consideration for enhanced delegations for Comd CADS employment of RS capabilities within CANR; and
 - c. Once complete, rename 22 Wing North Bay to “22 Air Control Wing North Bay”.

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